



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,839	03/30/2004	Lalit M. Bharadwaj	U 015121-7	3629

140 7590 03/01/2007  
LADAS & PARRY  
26 WEST 61ST STREET  
NEW YORK, NY 10023

EXAMINER
----------

LIN, JERRY

ART UNIT	PAPER NUMBER
----------	--------------

1631

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/01/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/812,839	<b>Applicant(s)</b> BHARADWAJ ET AL.	
	<b>Examiner</b> Jerry Lin	<b>Art Unit</b> 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18, 20 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1 page (5/4/2005)</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group I, claims 1-18, 20 and 21 in the reply filed on December 11, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). This requirement is made final.

### ***Status of the Claims***

Claims 1-18, 20 and 21 are under examination.

Claim 19 is withdrawn as being drawn to an unelected group.

### ***Claim Rejections - 35 USC § 112, 2<sup>nd</sup> Paragraph***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claims 2 and 17, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation

Art Unit: 1631

given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10

USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is

followed by "such as" and then narrow language. The Board stated that this can render

a claim indefinite by raising a question or doubt as to whether the feature introduced by

such language is (a) merely exemplary of the remainder of the claim, and therefore not

required, or (b) a required feature of the claims. Note also, for example, the decisions

of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd.

App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present

instance, claim 2 recites the broad recitation "any other organism's", and the claim also

recites "human" which is the narrower statement of the range/limitation. Claim 17

recites the broad recitation "other organism", and the claim also recites "human" which

is the narrower statement of the range/limitation.

3. Instant claim 14 recites, "wherein a fixed number of different DNA primers sequences assigned a number, which resembles the segments position they represent."

This claim is unclear because of its grammar. It is unclear to what the pronoun "they" is

referring. It is unclear to what is a number assigned. It is unclear to what segment

positions belong. Clarification via clearer claim language is requested.

4. Instant claim 15 is also unclear because according to claim 1, a primer flanks the

DNA sequence at each end. However, it is unclear how the DNA sequence is to have

two tail primers as opposed to one tail primer.

5. The term "resembles" in claim 15 is a relative term which renders the claim

indefinite. The term "resembles" is not defined by the claim, the specification does not

Art Unit: 1631

provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear to what degree of similarity is needed for a primer to "resemble" a continuation or termination segment.

6. Instant claim 17 contains the abbreviation of "SM". It is unclear what this abbreviation is.

7. Claim 18 recites the limitation "the message" in line 2. There is insufficient antecedent basis for this limitation in the claim. This limitation was not mentioned previously in the instant claim or in the claim from which it depends.

### ***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-13, 15-18, 20, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Bancroft et al. (US 6,321,911).

The instant claims are drawn to a method of encoding information in DNA by producing a synthetic DNA molecule with encrypted information that can be decoded with an encryption key, where the molecule is flanked on each side by a primer sequence, and storing the DNA molecule with homogenous/heterogeneous DNA.

Regarding claims 1 and 16, Bancroft et al. teach a method of producing a synthetic DNA molecule with encrypted information that can be decoded with an encryption key, where the molecule is flanked on each side by a primer sequence (column 2, lines 34-54; column 4, lines 55-67); and storing the DNA molecule with homogenous/heterogeneous DNA (column 2, lines 34-54).

Regarding claims 2-4, Bancroft et al. teach where the storage DNA is genomic human DNA (column 3, lines 4-17), where the storage DNA is synthetic (column 5, lines 1-30).

Regarding claim 6 and 7, wherein the minimum number of bases defined an extended ASCII character (Figure 1B), wherein four sequence combination result form A, T, G, and C (figure 1B, column 4, lines 55-67).

Regarding claims 8 and 9, Bancroft et al. teach wherein with 2 bases or 3 bases 16 or 64 sequences are obtained (Figure 1B) (Furthermore, it is noted that the Applicants support this analysis as stated on page 1 of the instant specification).

Regarding claim 10, Bancroft et al. teach using all four nucleotides in their method (column 4, lines 55-67), thus a four sequence combination would create 256 distinct sequences and enable 256 extended ASCII characters to be defined in terms of DNA sequences (page 11, paragraph 24-46).

Regarding claim 11, Bancroft et al. teach where plain text/image is encrypted in terms of DNA sequences using encryption key software (page 11, paragraph 24-46).

Regarding claim 12, Bancroft et al. teach where the encoded data is expressed in different fragments of DNA (column 4, lines 45-54; column 6, lines 30-42).

Regarding claim 13, Bancroft et al. teach using a DNA synthesizer (column 4, line 55- column 5, line 30).

Regarding claim 15, Bancroft et al. teach adding segments that terminate transcription (methylation) or continue (primer that begins the transcription of nucleotide bases that follow it) (column 4, lines 15-35; column 3, lines 46-65)

Regarding claim 17, Bancroft et al. teach where the DNA is mixed with complex denatured DNA strands of human genomic DNA or other organism (column 2, lines 34-54; column 4, lines 1-14).

Regarding claims 18 and 21, Bancroft et al. teach extracting the message (column 5, lines 35-54); using PCR to isolate and amplify the encrypted DNA strand (column 5, lines 35-54); sequencing the DNA strand (column 5, lines 35-54); and converting the DNA sequence using the encryption/decryption key (column 2, lines 34-54).

Instant claim 20 adds the limitation of transporting an encrypted DNA to the above limitation which Bancroft teaches (delivering the DNA to a recipient) (column 5, lines 35-55).

#### ***Contact Information***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Lin whose telephone number is (571) 272-2561. The examiner can normally be reached on 10:00-6:30, M-F.

Art Unit: 1631

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Irem Yucel can be reached on (571) 272-0781. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JL

  
**REMY YUCEL, PH.D**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1600**